WHAT IS CLAIMED IS:

1. A parallel capillary electrophoresis system for separating and analyzing the components of multiple chemical samples, said system comprising a bundle of capillary tubes arrayed to have at least portions of the tubes extending generally parallel to one another in a first plane, each tube being adapted for the flow of a fluid sample therethrough, a power source for applying a potential difference between inlet end portions and outlet end portions of the tubes to cause an electrical current to flow through the contents of the capillary tubes at a level sufficient to cause separation in said fluid samples, a light source for emitting light to pass through said capillary tube portions, a photodetector comprising a linear array of photodetector elements for receiving light passing through said capillary tubes, the light passing through each of said capillary tube portions illuminating several photodetector elements, each said photodetector element generating a pixel signal corresponding to the light received by said photodetector element, an analog to digital converter converting each of the pixel signals into a digital value corresponding to the light received by one of the photodetector elements, and a processor receiving the digital values and generating a plurality of output signals corresponding thereto, each output signal being a function of at least two digital values corresponding to the light received by two photodetector elements, respectively, so that the output signals correspond to the light passing through the bundle of capillary tubes; wherein the processor generates output signals such that each output signal is a function of at least two digital values corresponding to the light passing substantially concurrently through two photodetector elements, respectively.

2. The system as set forth in claim 1 wherein the processor selects one digital value and averages the selected digital value with at least a second digital value to generate averaged values and wherein the output signals are a function of the averaged values.

3. The system as set forth in claim 2 wherein the selected digital value and the second digital value correspond to pixel signals from contiguous photodetector elements.

4. The system as set forth in claim 1 wherein each pixel signal is converted into a sequence of digital values and wherein the processor provides output signals which are a function of the sequence of digital values.

5. The system as set forth in claim 1 wherein the at least two digital values are selected to minimize short time fluctuations or other noise of the pixel signals to generate an improved signal to noise ratio of the pixel signals.

6. A parallel capillary electrophoresis system for separating and analyzing the components of multiple chemical samples, said system comprising a bundle of capillary tubes arrayed to have at least portions of the tubes extending generally parallel to one another in a first plane, each tube being adapted for the flow of a fluid sample therethrough, a power source for applying a potential difference between inlet end portions and outlet end portions of the tubes to cause an electrical current to flow through the contents of the capillary tubes at a level sufficient to cause separation in said fluid samples, a light source for emitting light to pass through said capillary tube portions, a photodetector comprising a linear array of photodetector elements for receiving light passing through said capillary tubes, the light passing through each said capillary tube portions illuminating several photodetector elements, each said photodetector element generating a pixel signal corresponding to the light received by said photodetector element, an analog to digital converter converting each of the pixel signals into a digital value corresponding to the light received by one of the photodetector elements, and a processor receiving the digital values and generating a plurality of output signals corresponding thereto, each output signal being a function of at least two digital values corresponding to the light received by two photodetector elements, respectively, so that the output signals correspond to the light passing through the bundle of capillary tubes; wherein the processor selects one peak digital value and averages the selected digital value with four digital values which correspond to pixel signals from photodetector elements adjacent to the photodetector element corresponding to the selected peak digital value and wherein the output signals are a function of the averaged values.

7. The system as set forth in claim 6 wherein the selected peak digital value corresponds to the light passing through one capillary tube portion.

8. A parallel capillary electrophoresis system for separating and analyzing the components of multiple chemical samples, said system comprising a bundle of capillary tubes arrayed to have at least portions of the tubes extending generally parallel to one another in a first plane, each tube being adapted for the flow of a fluid sample therethrough, a power source for applying a potential difference between inlet end portions and outlet end portions of the tubes to cause an electrical current to flow through the contents of the capillary tubes at a level sufficient to cause separation in said fluid samples, a light source

for emitting light to pass through said capillary tube portions, a photodetector comprising a linear array of photodetector elements for receiving light passing through said capillary tubes, the light passing through each of said capillary tube portions illuminating several photodetector elements, each of said photodetector elements generating a pixel signal corresponding to the light received by said photodetector element, an analog to digital converter converting each of the pixel signals into a digital value corresponding to the light received by one of the photodetector elements, and a processor receiving the digital values and generating a plurality of output signals corresponding thereto, each output signal being a function of at least two digital values corresponding to the light received by two photodetector elements, respectively, so that the output signals correspond to the light passing through the bundle of capillary tubes; wherein the processor selects one peak digital value and averages the selected digital value with at least a second digital value to generate averaged values and wherein the output signals are a function of the averaged values, and further comprising a display receiving the output signals and generating an electropherogram corresponding thereto.

9. A parallel capillary electrophoresis system for separating and analyzing the components of multiple chemical samples, said system comprising:

a bundle of capillary tubes arrayed to have at least portions of the tubes extending generally parallel to one another in a first plane, each tube being adapted for the flow of a fluid sample therethrough;

a power source for applying a potential difference between inlet end portions and outlet end portions of the tubes to cause an electrical current to flow through the contents of the capillary tubes at a level sufficient to cause separation in said fluid samples;

a light source for emitting light to pass through said capillary tube portions;

a photodetector comprising a linear array of photodetector elements for receiving light passing through said capillary tubes, said linear array being positioned non-parallel to the first plane, the light passing through each of said capillary tube portions illuminating several photodetector elements, each said photodetector element generating a pixel signal corresponding to the light received by said photodetector element;

an analog to digital converter converting each of the pixel signals into a digital value corresponding to the light received by one of the photodetector elements; and

a processor receiving the digital values and generating a plurality of output signals corresponding thereto, each output signal being a function of at least two digital values corresponding to the light received by two photodetector elements, respectively, so that the output signals correspond to the light passing through the bundle of capillary tubes;

wherein each pixel signal is converted into a sequence of digital values and the output signals are a function of an average over time of the sequence of digital values.

10. A parallel capillary electrophoresis system for separating and analyzing the components of multiple chemical samples, said system comprising a bundle of capillary tubes arrayed to have at least portions of the tubes extending generally parallel to one another in a first plane, each tube being adapted for the flow of a fluid sample therethrough, a power source for applying a potential difference between inlet end portions and outlet end portions of the tubes to cause an electrical current to flow through the contents of the capillary tubes at a level sufficient to cause separation in said fluid samples, a light source for emitting light to pass through said capillary tube portions, a photodetector comprising a linear array of photodetector elements for receiving light passing through said capillary tubes, the light passing through each said capillary tube portions illuminating several photodetector elements, each said photodetector element generating a pixel signal corresponding to the light received by said photodetector element, an analog to digital converter converting each of the pixel signals into a digital value corresponding to the light received by one of the photodetector elements, and a processor receiving the digital values and generating a plurality of output signals corresponding thereto, each output signal being a function of at least two digital values corresponding to the light received by two photodetector elements, respectively, so that the output signals correspond to the light passing through the bundle of capillary tubes; wherein the at least two digital values are selected to minimize long time drifts of the pixel signals to generate a substantially flat baseline of the pixel signals.

11. A method of processing a plurality of pixel signals, each generated by one element of an array of photodetector elements illuminated by light passing through a bundle of capillary tubes during a multiplexed capillary electrophoresis process, said method comprising:

converting each of the pixel element signals into a digital value corresponding to the light received by one of the photodetector elements;

selecting, for each capillary tube, at least two digital values corresponding to the light received by two photodetector elements; and

generating output signals corresponding to the light passing through the bundle of capillary tubes, each output signal being a function of the selected digital values, wherein each output signal is a function of at least two digital values corresponding to the light passing substantially concurrently through two photodetector elements, respectively.

12. The method as set forth in claim 11 comprising selecting one digital value and averaging the selected digital value with at least a second digital value to generate averaged values and wherein the output signals are a function of the averaged values.

13. The method as set forth in claim 12 wherein the selected digital value and the second digital value correspond to pixel signals from contiguous photodetector elements.

14. The method as set forth in claim 11 wherein each pixel signal is converted into a sequence of digital values and wherein the output signals are a function of the sequence of digital values.

15. The method as set forth in claim 11 wherein the at least two digital values are selected to minimize short time fluctuations or other noise of the pixel signals to generate an improved signal to noise ratio of the pixel signals.

16. A method of processing a plurality of pixel signals, each generated by one element of an array of photodetector elements illuminated by light passing through a bundle of capillary tubes during a multiplexed capillary electrophoresis process, said method comprising:

converting each of the pixel element signals into a digital value corresponding to the light received by one of the photodetector elements;

selecting, for each capillary tube, at least two digital values corresponding to the light received by two photodetector elements;

generating output signals corresponding to the light passing through the bundle of capillary tubes, each output signal being a function of the selected digital values; and

selecting one peak digital value and averaging the selected digital value with four digital values, which correspond to pixel signals from photodetector elements adjacent to the photodetector element corresponding to the selected peak digital value and wherein the output signals are a function of the averaged values.

17. The method as set forth in claim 16 wherein the selected peak digital value corresponds to the light passing through one capillary tube portion.

18. A method of processing a plurality of pixel signals, each generated by one element of an array of photodetector elements illuminated by light passing through a bundle of capillary tubes during a multiplexed capillary electrophoresis process, said method comprising:

converting each of the pixel element signals into a digital value corresponding to the light received by one of the photodetector elements;

selecting, for each capillary tube, at least two digital values corresponding to the light received by two photodetector elements;

generating output signals corresponding to the light passing through the bundle of capillary tubes, each output signal being a function of the selected digital values; and

selecting one peak digital value and averaging the selected digital value with at least a second digital value to generate averaged values and wherein the output signals are a function of the averaged values, and further comprising displaying an electropherogram corresponding to the output signals.

19. A method of processing a plurality of pixel signals, each generated by one element of an array of photodetector elements illuminated by light passing through a bundle of capillary tubes during a multiplexed capillary electrophoresis process, said bundle of capillary tubes arrayed to have at least portions of the tubes extending generally parallel to one another in a first plane, said method comprising:

positioning the array of photodetector elements non-parallel to the first plane;

converting each pixel signal into a sequence of digital values;

a digital value corresponding to the light received by one of the photodetector elements;

selecting, for each capillary tube, at least two digital values corresponding to the light received by two photodetector elements; and

generating output signals corresponding to the light passing through the bundle of capillary tubes, wherein the output signals are a function of an average over time of the sequence of digital values.

20. A method of processing a plurality of pixel signals, each generated by one element of an array of photodetector elements illuminated by light passing through a bundle of capillary tubes during a multiplexed capillary electrophoresis process, said method comprising:

converting each of the pixel element signals into a digital value corresponding to the light received by one of the photodetector elements;

selecting, for each capillary tube, at least two digital values corresponding to the light received by two photodetector elements, wherein the at least two digital values are selected to minimize long time drifts of the pixel signals to generate a substantially flat baseline of the pixel signals; and

generating output signals corresponding to the light passing through the bundle of capillary tubes, each output signal being a function of the selected digital values.

21. A parallel capillary electrophoresis system for separating and analyzing the components of multiple chemical samples, said system comprising:

a bundle of capillary tubes arrayed to have at least portions of the tubes extending generally parallel to one another in a first plane, each tube being adapted for the flow of a fluid sample therethrough;

a power source for applying a potential difference between inlet end portions and outlet end portions of the tubes to cause an electrical current to flow through the contents of the capillary tubes at a level sufficient to cause separation in said fluid samples;

a light source for emitting light to pass through said capillary tube portions;

a photodetector comprising a linear array of photodetector elements for receiving light passing through said capillary tubes, said linear array being positioned non-parallel to the first plane, the light passing through each of said capillary tube portions illuminating several photodetector elements, each of said photodetector element generating a pixel signal corresponding to the light received by said photodetector element;

an analog to digital converter converting each of the pixel signals into a digital value corresponding to the light received by one of the photodetector elements; and

a processor receiving the digital values and generating a plurality of output signals corresponding thereto, each output signal being a function of at least two digital values corresponding to the light received by two photodetector elements, respectively, so that the output signals correspond to the light passing through the bundle of capillary tubes.

22. A system as set forth in claim 21 wherein the linear array is positioned generally perpendicular to the first plane.

23. A system as set forth in claim 21 wherein the processor generates output signals such that each output signal is a function of at least two digital values corresponding to the light passing substantially concurrently through two photodetector elements, respectively.

24. A system for use in analyzing multiple samples simultaneously by absorption detection, which system comprises:

(i) a planar array of multiple containers, into each of which can be placed a sample,

(ii) a light source for emitting light to pass through the planar array of multiple containers,

(iii) a photodetector, which is in line with the light source, is positioned in line with and parallel to the planar array of multiple containers, and comprises a linear array of photosensitive elements for receiving light passing through the planar array of multiple containers, wherein, upon illumination of a photosensitive element by light passing through the planar array of multiple containers, a pixel signal corresponding to the light received by the photosensitive element is generated,

(iv) an analog to digital converter, which converts the pixel signal for each illuminated photosensitive element to a digital value corresponding to the light received by the respective photosensitive element, and

(v) a processor, which receives the digital values and generates a plurality of output signals corresponding thereto, each output signal being a function of at least two digital values corresponding to the light passing substantially concurrently through two photosensitive elements.

25. The system of claim 24, wherein the processor selects one peak digital value and averages the selected digital value with four digital values, which correspond to pixel signals from photosensitive elements adjacent to the photosensitive element corresponding to the selected peak digital value, and wherein the output signals are a function of the averaged values.

26. The system of claim 24, wherein the processor selects one peak digital value and averages the selected digital value with at least a second digital value to generate averaged values and wherein the output signals are a function of the averaged values, and further comprising a display receiving the output signals and generating an electropherogram corresponding thereto.

27. The system of claim 24, wherein each pixel signal is converted into a sequence of digital values and the output signals are a function of an average over time of the sequence of digital values.

28. The system of claim 24, wherein the at least two digital values are selected to minimize long time drifts of the pixel signals to generate a substantially flat baseline of the pixel signals.

29. A method of processing a plurality of pixel signals, each generated by one element of an array of photosensitive elements illuminated by light passing through a planar array of multiple containers, said method comprising:

converting each of the pixel element signals into a digital value corresponding to the light received by one of the photosensitive elements;

selecting, for each container, at least two digital values corresponding to the light received by two photosensitive elements; and

generating output signals corresponding to the light passing through the planar array of multiple containers, each output signal being a function of the selected digital values, wherein each output signal is a function of at least two digital values corresponding to the light passing substantially concurrently through two photosensitive elements, respectively.

30. A method of processing a plurality of pixel signals, each generated by one element of an array of photosensitive elements illuminated by light passing through a planar array of multiple containers, said method comprising:

converting each of the pixel element signals into a digital value corresponding to the light received by one of the photosensitive elements;

selecting, for each container, at least two digital values corresponding to the light received by two photosensitive elements;

generating output signals corresponding to the light passing through the planar array of multiple containers, each output signal being a function of the selected digital values; and

selecting one peak digital value and averaging the selected digital value with four digital values, which correspond to pixel signals from photosensitive elements adjacent to the photosensitive element corresponding to the selected peak digital value and wherein the output signals are a function of the averaged values.

31. A method of processing a plurality of pixel signals, each generated by one element of an array of photosensitive elements illuminated by light passing through a planar array of multiple containers, said method comprising:

converting each of the pixel element signals into a digital value corresponding to the light received by one of the photosensitive elements;

selecting, for each container, at least two digital values corresponding to the light received by two photosensitive elements;

generating output signals corresponding to the light passing through the planar array of multiple containers, each output signal being a function of the selected digital values; and

selecting one peak digital value and averaging the selected digital value with at least a second digital value to generate averaged values and wherein the output signals are a

function of the averaged values, and further comprising displaying an electropherogram corresponding to the output signals.

32. A method of processing a plurality of pixel signals, each generated by one element of an array of photosensitive elements illuminated by light passing through a planar array of multiple containers, said planar array of multiple containers arrayed to have at least portions of the containers extending generally parallel to one another in a first plane, said method comprising:

positioning the array of photosensitive elements non-parallel to the first plane;

converting each pixel signal into a sequence of digital values;

a digital value corresponding to the light received by one of the photosensitive elements;

selecting, for each container, at least two digital values corresponding to the light received by two photosensitive elements; and

generating output signals corresponding to the light passing through the planar array of multiple containers, wherein the output signals are a function of an average over time of the sequence of digital values.

33. A method of processing a plurality of pixel signals, each generated by one element of an array of photosensitive elements illuminated by light passing through a planar array of multiple containers, said method comprising:

converting each of the pixel element signals into a digital value corresponding to the light received by one of the photosensitive elements;

selecting, for each container, at least two digital values corresponding to the light received by two photosensitive elements, wherein the at least two digital values are selected to minimize long time drifts of the pixel signals to generate a substantially flat baseline of the pixel signals; and

generating output signals corresponding to the light passing through the planar array of multiple containers, each output signal being a function of the selected digital values.

34. A system for use in analyzing multiple samples simultaneously by absorption detection, which system comprises:

(i) a planar array of multiple containers, into each of which can be placed a sample,

(ii) a light source for emitting light to pass through the planar array of multiple containers,

(iii) a photodetector, which is in line with the light source, is positioned in line with and parallel to the planar array of multiple containers, and comprises a linear array of photosensitive elements for receiving light passing through the planar array of multiple containers, wherein, upon illumination of a photosensitive element by light passing through the planar array of multiple containers, a pixel signal corresponding to the light received by the photosensitive element is generated,

(iv) an analog to digital converter, which converts the pixel signal for each illuminated photosensitive element to a digital value corresponding to the light received by the respective photosensitive element, and

(v) a processor, which receives the digital values and generates a plurality of output signals corresponding thereto, each output signal being a function of at least two digital values corresponding to the light received by two photosensitive elements, respectively, so that the output signals correspond to the light passing through the planar array of multiple containers.